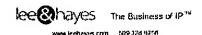# REMARKS

[0003]   Applicant respectfully requests reconsideration and allowance of all of the claims of the application. Claims 1-4 and 6-25 are presently pending. Claims amended herein are 1, 9, and 18. New claims added herein are 21-25.

Statement of Substance of Interview

[0004]   Examiner Jason Mitchell graciously talked with Michael D. Carter—the undersigned representative for the Applicant—on November 6, 2008. Applicant greatly appreciates the Examiner's willingness to talk.   Such willingness is invaluable to both of us in our common goal of an expedited prosecution of this patent application.

[0005]   During the interview, I discussed how the claims differed from the cited references. Without conceding the propriety of the rejections and in the interest of expediting prosecution, I also proposed several possible clarifying amendments.

[0006]   In a telephone discussion on November 6, 2008, Examiner Jason Mitchell indicated that the proposed amendments to the claims involving the commands sent to the GPU needed further clarification. Further, the Examiner indicated that support for the definition of the GPU needed to be specified in the response to the Office Action. Amendments are presented herein based on the discussion with the Examiner.

[0007]   Applicant herein amends the claims in the manner discussed during the interview. Accordingly, Applicant submits that the pending claims are allowable over the cited art of record for at least the reasons discussed during the interview.

Formal Request for an Interview

[0008]   If the Examiner's reply to this communication is anything other than allowance of all pending claims and there only issues that remain are minor or formal matters, then I formally request an interview with the Examiner. I encourage the Examiner to call me—the undersigned representative for the Applicant—so that we can talk about this matter so as to resolve any outstanding issues quickly and efficiently over the phone.

[0009]   Please contact me to schedule a date and time for a telephone interview that is most convenient for both of us. While email works great for me, I welcome your call as well. My contact information may be found on the last page of this response.

Claim Amendments and Additions

[0010]   Without conceding the propriety of the rejections herein and in the interest of expediting prosecution, Applicant amends claims 1, 9, and 18 herein. Applicant amends claims to clarify claimed features. Such amendments are made to expedite prosecution and more quickly identify allowable subject matter. Such amendments are merely intended to clarify the claimed features, and should not be construed as further limiting the claimed invention in response to the cited references. Support for the amendments may be located on page 16, lines 6-21 and pages 26-27 of the application as filed.

[0011]   Furthermore, Applicant adds new claims 21-25 herein. These new claims are fully supported by the Application and therefore do not constitute new

matter. Support for the amendments may be located in on page 16, lines 6-21 and pages 26-27 of the application as filed.

[0012]   Further, support for the definition of the GPU is located on, *inter alia*, page 9, lines 5-8.

Substantive Matters

Claim Rejections under § 103

[0013]   The Examiner rejects claims 1-4 and 6-20 under § 103. For the reasons set forth below, the Examiner has not made a prima facie case showing that the rejected claims are obvious.

[0014]   Accordingly, Applicant respectfully requests that the § 103 rejections be withdrawn and the case be passed along to issuance.

[0015]   The Examiner's rejections are based upon the following references in combination:

- **Advani:** *Advani, et al.,* US Patent No. 5,862,381 (issued January 19,1999);
- **Mills:** *Mills, et al.,* US Patent No. 6,055,560 (issued April 25, 2000);
- **Brown:** *Brown, et al.,* US Patent No. 6,631,423 (issued October 7, 2003); and
- **Zatz:** *Zatz, et al.,* US Patent No. 6,864,893 (issued March 8, 2005)

Overview of the Application

[0016]   The Application describes a technology for performance analysis, and more particularly to user interfaces for facilitating performance analysis for processing.

Cited References

[0017]   The Examiner cites Advani as the primary reference in the obviousness-based rejections. The Examiner cites Mills and Brown as secondary references in the obviousness-based rejections.

Advani

[0018]   Advani describes a technology for a visualization tool for creating graphic displays of trace data produced by a parallel computer program execution monitoring system. The visualization tool contains a display monitor, possible input devices, a mass storage device, and a computer system. Trace data is converted into data structures and later pixel maps to ultimately generate processing activity diagrams for each processor in the computer system. If more than one processor is present, more than one processing activity diagram can be generated and simultaneously displayed on the same screen in form of strip graphs and for certain indicated time intervals. An average processor utilization diagram is then calculated and plotted on every processor activity diagram for comparison purposes. Browsing through these strip graphs all at the same time while comparing them against the average utilization graph will allow a user to easily redistribute workload if necessary and/or locate problem situations.

Mills

[0019] Mills describes a technology for an interactive video system supporting functions typically expected with a VCR such as play, pause, fast forward and rewind. A set top box is coupled to a display terminal and a first interface. The set top box includes a memory for storing an operating system in set top enabling codes. A video dial tone network includes a control channel and a data channel coupled to a second interface linked to the first interface. A first gateway controls establishment of a video session between a video server and the display terminal. A second gateway establishes connection between the video server and the set top box over a data channel in response to an input from the first gateway. An application server coupled to the first gateway and the video server contains executable code for transferring video data, video and audio information from the video server to the display terminal. The application server includes a shared queue coupled to a plurality of application engines and set top boxes and includes program code for multi-tasking operation. The code operates the application engines in response to application tables to provide video transmission as a panel object indicative of the state of set top boxes in a video session.

Brown

[0020] Brown describes a technology for identification and assessment of performance optimizations implemented in the graphics environment, the identification and assessment of the performance optimizations based upon an optimized graphics call sequence generated by an application of one or

more optimizations applied to a captured graphics call sequence occurring between said first and second drivers. The resulting optimized graphics call sequence causes the same graphics rendering to occur when provided to the graphics system as the original graphics call sequence. As such, the graphics application and associated graphics interface driver may then be analyzed by the application developer to identify specific modifications which, when implemented, would generate such an optimized graphics call sequence. This may include implementing specific modifications to the graphics application as well as implementing portions or all of the present invention into the driver for real-time execution.

Zatz

[0021]   Zatz describes a technology for generating depth values in a programmable graphics system. Depth values are calculated under control of a pixel program using a variety of sources as inputs to programmable computation units (PCUs) in the programmable graphics systems. The PCUs are used to compute traditional interpolated depth values and modified depth values. Th PCUs are also used to compute arbitrary depth values which, unlike traditional interpolated depth values and modified depth values, are not dependent on the coordinates of the geometry primitive with which the arbitrary depth values are associated. Several sources are available as inputs to the PCUs. Clipping with optional clamping is performed using either interpolated depth values or calculated depth values, where calculated depth values are arbitrary depth values or modified depth values. Final depth values,

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used for depth testing, are selected from interpolated depth values and arbitrary depth values after clipping is performed.

Obviousness Rejections

Lack of *Prima Facie* Case of Obviousness (MPEP § 2142)

[0022]   Applicant disagrees with the Examiner's obviousness rejections. Arguments presented herein point to various aspects of the record to demonstrate that all of the criteria set forth for making a prima facie case have not been met.

Based upon Advani

[0023]   The Examiner rejects claims 1-4, 6-7, 9-15 and 17-20 under 35 U.S.C. § 103(a) as being unpatentable over Advani.   Applicant respectfully traverses the rejection of these claims and asks the Examiner to withdraw the rejection of these claims.

Independent Claim 1

[0024]   The Examiner indicates (Action, pages 2-4) the following with regard to claim 1:

4.   As per claims 1, 9 and 18 Advani teaches the invention substantially as claimed including a method for controlling presentation of information to facilitate performance analysis for processing (col. 1, lines 5-9, 54-55), the method comprising:

capturing a list of events during processing of a set of commands by a processing unit; displaying a listing of the captured events as well as information regarding the processing of the events (col. 1, lines 18, 24-42, col. 3, lines 29-31, col. 10, lines 43-45);

receiving a user selection of one of the events of the listing; executing commands associated with the selected event in the processing unit (fig. 6B, 6C, col. 9, lines 53-63, col. 10, lines 6-8, col. 7, lines 60-62).

5.   Advani teaches to produce multiple windows and since data is available (collected and stored), it is just a matter to sort/called to produce desire display (col. 7, lines 65-67). Therefore Advani inherently teaches the second window that shows how the frame appears at different points while being drawn.

6.   Advani does not explicitly teach capturing the state of the graphics processing unit for each of the captured events; modifying selected events; setting the state of the graphics processing unit to the captured state associated with the selected event; and displaying in the video frame portion a visual representation of the frame resulting from the execution of the selected event.

7. Brown teaches capturing the state of the graphics processing unit for each of the captured events (col. 12, lines 43-46); modifying selected events (col. 13, lines 60-65); setting the state of the graphics processing unit to the captured state associated with the selected event (col. 4, lines 28-31). But does not explicitly teach displaying in the video frame portion a visual representation of the frame resulting from the execution of the selected event.

8. Mills teaches composing and displaying in the video frame portion a visual representation of the frame resulting from the execution of the selected event (col. 9, lines 50-57).

9. It would have been obvious to one of the ordinary skill in the art at the time of the invention was made to include capturing the state (as taught by brown) and displaying video frame portion (as taught by Mills) in Advani's system because by doing so user can quickly identify errors and anomalies that occurred during program execution and can see the effects of those error concerning to video frame on a display device.

[0025]   Independent claim 1, as amended, recites a method for controlling presentation of information to facilitate performance analysis for processing, the method comprising, capturing a list of events directed at composing a video frame during processing of a set of commands by a graphics processing unit, a subset of the events comprising commands sent to the graphics processing unit from a memory location; capturing the state of the graphics processing unit for each of the captured events; displaying a listing of the captured events as well as information regarding the processing of the events; displaying a window

including a video frame portion that displays a rendering of the video frame; receiving a user selection of one of the events of the listing; modifying the selected event; setting the state of the graphics processing unit to the captured state associated with the selected event; executing the selected event in the graphics processing unit; and displaying in the video frame portion a visual representation of the frame resulting from the execution of the selected event.

[0026]   The cited art does not teach or suggest "capturing a list of events directed at composing a video frame during processing of a set of commands by a graphics processing unit, *a subset of the events comprising commands sent to the graphics processing unit from a memory location* [emphasis added]."

[0027]   Rather, the combination of the cited references, and specifically, Brown, merely teach capturing graphics call sequences and generating an optimized graphics call sequence that provides for the same rendering as the original graphics call sequence. See column 11, lines 40-48. Brown recites the redundant, conflicting, or otherwise unnecessary graphics states calls are eliminated to reduce the total number of graphics state calls. See column 13, lines 60-65. The cited art, and specifically, Brown, does not teach or suggest capturing a list of events for a video frame during processing by a GPU, much less a subset of the event comprises commands sent from a memory location.

[0028]   Consequently, the cited art does not disclose all of the elements and features of this claim. Accordingly, Applicant asks the Examiner to withdraw the rejection of this claim.

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Dependent Claims 2-4 and 6-8

[0029]   In addition to their own merits, dependent claims 2-4 and 6-8 are allowable for the same reasons that independent claim 1 is allowable. Applicant requests that the Examiner withdraw the rejection of dependent claims 2-4 and 6-8.

Independent Claim 9

[0030]   The text for the rejection of claim 9 is the same as the text recited above for claim 1.

[0031]   To that end, claim 9, as amended, recites, one or more computer readable media having one or more instructions that, when executed by one or more processors, causes the one or more processors to, capture a list of events directed at composing a video frame during processing of a set of commands by a graphics processing unit; capture the state of the graphics processing unit for each of the captured events, the state comprising transitory states of internal variables of the graphics processing unit; display a first window that identifies the list of events that have been captured during the drawing of the video frame; receive a user selection of one of the events in the list; modify the selected event; set the state of the graphics processing unit to the captured stated associated with the selected event; execute the selected event in the graphics

processing unit; and display a second window including a video frame portion that shows how the frame appears at different points while being drawn.

[0032]   The cited art does not teach or suggest "capture the state of the graphics processing unit for each of the captured events, ***the state comprising transitory states of internal variables of the graphics processing unit*** [emphasis added]."

[0033]   As mentioned above, the combination of the cited references, and specifically, Brown, merely teach capturing graphics call sequences and generating an optimized graphics call sequence that provides for the same rendering as the original graphics call sequence. See column 11, lines 40-48. Brown recites the redundant, conflicting, or otherwise unnecessary graphics states calls are eliminated to reduce the total number of graphics state calls. See column 13, lines 60-65. The cited art, and specifically Brown, does not recite capturing transitory states of internal variables of the GPU.

[0034]   Consequently, the cited art does not disclose all of the elements and features of this claim. Accordingly, Applicant asks the Examiner to withdraw the rejection of this claim.

Dependent Claims 10-17

[0035]   In addition to their own merits, dependent claims 10-17 are allowable for the same reasons that independent claim 1 is allowable. Applicant requests that the Examiner withdraw the rejection of dependent claims 10-17.

Independent Claim 18 and dependent claims 19-20

[0036]   Applicant respectfully contends that the arguments set forth above with respect to independent claim 18, as amended, applies with equal weight here and the cited art does not disclose all of the claimed elements and features of independent claim 18, as amended. Accordingly, Applicant asks the Examiner to withdraw the rejection of this claim. Further, dependent claims 19-20 are allowable for the same reasons that independent claim 18 is allowable. Applicant requests that the Examiner withdraw the rejection of dependent claims 19-20.

New Dependent Claim 20

[0037]   In addition to their own merits, dependent claim 20 is allowable for the same reasons that independent claim 1 is allowable.

New Dependent Claim 22

[0038] Claim 22 recites, *inter alia*, wherein capturing the list of events further comprises determining if the memory location was previously referenced by commands associated with a differing subset of events.

[0039] The cited art is completely silent with respect to determining if the memory location that sent commands from a subset of events to the GPU was referenced by a commands of a differing subset of events.

New Dependent Claim 23-25

[0040] In addition to their own merits, dependent claims 23-25 are allowable for the same reasons that independent claim 1 is allowable.

Conclusion

[0041] All pending claims are in condition for allowance. Applicant respectfully requests reconsideration and prompt issuance of the application. If any issues remain that prevent issuance of this application, the **Examiner is urged to contact me before issuing a subsequent Action**. Please call or email me at your convenience.

Respectfully Submitted,

Lee & Hayes, PLLC
Representatives for Applicant

__/Michael D. Carter/_____   Dated: /Nov. 17, 2008/__

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